Electronic Version
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Claims

[c1] A method usable with a subterranean well, comprising:
deploying a spring downhole;
energizing the spring; and

[c2] The method of claim 1, wherein the energizing the spring comprises:
energizing a coil spring.

[c3] The method of claim 1, further comprising:
using a spring that has a wall thickness that increases from a point near the end of the spring to a point near a midpoint of the spring.

[c4] The method of claim 1, further comprising:
energizing the spring before running the spring downhole.

[c5] The method of claim 4, further comprising:
releasing the spring from an unenergized state to form the annular barrier.

[c6] The method of claim 4, wherein the energizing the spring comprises:
twisting the spring to reduce a diameter of the spring

while maintaining the spring at the same axial length.

[c7] The method of claim 6, wherein the twisting comprises:
twisting the spring consistent with a helical orientation of the spring.

[c8] The method of claim 4, wherein the spring has an axial length and the energizing the spring comprises:
pulling the spring to energize the spring.

[c9] The method of claim 4, wherein the energizing the spring comprises:
twisting the spring from a direction opposite from a direction defined by a helical orientation of the spring.

[c10] The method of claim 1, further comprising:
energizing the spring after running the spring downhole.

[c11] The method of claim 10, further comprising:
energizing the spring using sleeves to compress the spring.

[c12] The method of claim 1, further comprising:
deploying the spring around a wedge.

[c13] The method of claim 12, further comprising:
using a wedge whose wall thickness is tapered so that the wall thickness is near a maximum near a midpoint of the wedge.

[c14] The method of claim 12, further comprising:
deploying a wedge that comprises the spring along a spring.

[c15] The method of claim 1, further comprising:
providing an elastomer sleeve around the spring.

[c16] A method usable with a subterranean well, comprising:
forming a helical groove in a tubular member to form a spring that is used to expand in the subterranean well to form an annular barrier.

[c17] The method of claim 16, further comprising:
longitudinally varying a profile of the tubular member to form the spring.

[c18] The method of claim 17, wherein the varying comprises:
making a wall thickness of the tubular member smaller near a midpoint of the spring than near an end of the spring.

[c19] The method of claim 17, wherein the varying comprises:
varying a winding density of the groove.

[c20] The method of claim 19, wherein the varying the winding density of the groove comprises:
forming a higher density of windings of the groove near a midpoint of the spring than near an end of the spring.

[c21] An apparatus usable in a subterranean well, comprising:
a spring adapted to expand to form an annular barrier in the well.

[c22] The apparatus of claim 21, wherein the spring comprises:
a tubular member having a helical groove.

[c23] The apparatus of claim 22, wherein a profile of the tubular member varies along a longitudinal length of the spring.

[c24] The apparatus of claim 23, wherein a thickness of the tubular member is thinner near a midpoint of the spring than near an end of the spring.

[c25] The apparatus of claim 22, wherein an angle of the helical groove varies along a length of the spring.

[c26] The apparatus of claim 25, wherein the tubular member has a higher density of windings of the helical groove near a midpoint of the tubular member than near an end of the tubular member.

[c27] The apparatus of claim 21, further comprising:
a sealing sleeve circumscribing the spring.

[c28] The apparatus of claim 27, wherein the sealing sleeve

comprises an elastomer sleeve.

[c29] The apparatus of claim 21, further comprising:
a wedge circumscribed by the spring and adapted to exert a radial force to expand the spring.

[c30] The apparatus of claim 29, wherein the wedge comprises another spring.

[c31] The apparatus of claim 30, wherein said another spring comprises a winding that has an opposite orientation than a winding of the first spring.

[c32] A system usable in a subterranean well, comprising:
a string adapted to be run into a wellbore of the well; and
a spring adapted to expand to form an annular barrier in the well.

[c33] The system of claim 32, wherein the spring comprises:
a tubular member having a helical groove.

[c34] The system of claim 33, wherein a profile of the tubular member varies along a longitudinal length of the spring.

[c35] The system of claim 33, wherein a thickness of the tubular member is thinner near a midpoint of the spring than near an end of the spring.

[c36] The system of claim 33, wherein an angle of the helical groove varies along a length of the spring.

[c37] The system of claim 33, wherein the tubular member has a higher density of windings of the helical groove near a midpoint of the tubular member than near an end of the tubular member.

[c38] The apparatus of claim 32, further comprising:
a sealing sleeve circumscribing the spring.

[c39] The apparatus of claim 38, wherein the sealing sleeve comprises an elastomer sleeve.

[c40] The apparatus of claim 32, further comprising:
a wedge circumscribed by the spring and adapted to exert a radial force to expand the spring.

[c41] The apparatus of claim 40, wherein the wedge comprises another spring.

[c42] The apparatus of claim 41, wherein said another spring comprises a winding that has an opposite orientation than a winding of the first spring.

[c43] An apparatus usable with a wellbore of a subterranean well, the wellbore having a minimum open hole inner diameter, the apparatus comprising:
a base pipe;

a spring mounted to the base pipe; and

an outer sealing element at least partially surrounding the spring, wherein the sealing element in a relaxed state of the spring has an outer diameter larger than the minimum open hole inner diameter.

[c44] The apparatus of claim 43, wherein the spring comprises:

a tubular member having a helical groove.

[c45] The apparatus of claim 44, wherein a profile of the tubular member varies along a longitudinal length of the spring.

[c46] The apparatus of claim 44, wherein a thickness of the tubular member is thinner near a midpoint of the spring than near an end of the spring.

[c47] The apparatus of claim 44, wherein an angle of the helical groove varies along a length of the spring.